Vectra GENISYS®

User Manual

Model 2784

Vectra Genisys® Laser

chattanooga

Chattanooga Group is an ISO 13485 Certified Company

TOC

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FOREWORD

This manual has been written for the operators of the Vectra Genisys Laser. It contains general instructions for operation, precautionary instructions, and maintenance recommendations. In order to obtain maximum life and efficiency from your Vectra Genisys Laser, and to assist in the proper operation of the unit, read and understand this manual thoroughly.

The specifications put forth in this manual were in effect at the time of publication. However, owing to Chattanooga Group's policy of continuous improvement, changes to these specifications may be made at any time without obligation on the part of Chattanooga Group.

Before administering any treatment to a patient, you should become acquainted with the operating procedures, as well as the indications, contraindications, warnings, and precautions. Consult other resources for additional information regarding the application of therapeutic laser light. Users of this device should refer to CAN/CSA-Z386-92: Laser Safety in Health Care Facilities or ANSI Z-136.3, 1996: American National Standard for the Safe Use of Lasers in the Health Care Environment.

Product Description

The Vectra Genisys Laser, designed and manufactured by Chattanooga Group, offers a new dimension in clinical laser light therapy made possible by advanced software design and digital signal processing.

Effectiveness of this treatment is dependent upon correct use. If treatment times are exceeded, the therapy may not result in positive clinical outcomes.

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FOREWORD

The following features are available on the Vectra Genisys Laser:

- **Clinical Portable Battery Powered Option**
  The Vectra Genisys Laser is a truly portable laser unit that does not confine you to a wall socket to operate.
- **Clinical Indications**
  An efficient approach for setting up a treatment using preset parameters.
- **Real Time Feedback**
  This feature provides a measured and monitored output system that adjusts the dosage delivered to the patient.
- **Electronic Signature™**
  Automatically calibrate the system to any Vectra Genisys Laser applicator.
- **Ergonomic Applicators**
  A new ergonomic design that offers a 20 degree contour in the applicator hand grip. This ergonomic extra will help deliver uniform laser light therapy with greater clinician comfort.
- **Clear LCD**
  Guide the operator through the setup process providing continuous feedback about treatment settings. Gives you optimal visibility during attended procedures.
- **User Protocols**
  User protocols allow you to set, save, and change the parameters of each program (protocol) in order to tailor it to meet your patients' specific needs. Ten storage slots are available for user protocols.

Precautionary Instructions

The precautionary instructions found in this section and throughout this manual are indicated by specific symbols. Understand these symbols and their definitions before operating this equipment. The definition of these symbols are as follows:

=CAUTION- Text with a "CAUTION" indicator will explain possible safety infractions that could have the potential to cause minor to moderate injury or damage to equipment.

=WARNING- Text with a "WARNING" indicator will explain possible safety infractions that will potentially cause serious injury and equipment damage.

=DANGER- Text with a "DANGER" indicator will explain possible safety infractions that are imminently hazardous situations that would result in death or serious injury.

NOTE: Throughout this manual "NOTE" may be found. These Notes are helpful information to aid in the particular area or function being described.

CAUTION

- Read, understand, and practice the precautionary and operating instructions. Know the limitations and hazards associated with using any laser light device. Observe the precautionary and operational decals placed on the unit.
- Do not operate this unit when connected to any unit other than Chattanooga Group devices.
- Do not operate this unit in an environment where other devices are being used that intentionally radiate electromagnetic energy in an unshielded manner. Portable and mobile RF communications equipment can affect Medical Electrical Equipment.
- DO NOT use sharp objects such as a pencil point or ballpoint pen to operate the buttons on the control panel as damage may result.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure to laser light energy.
- Handle the applicator with care. Inappropriate handling of the applicator may adversely affect its characteristics.
- Inspect applicator cables and associated connectors before each use.
- This unit should be operated in temperatures between 59 to 85°F (15 to 40°C), and transported and stored in temperatures between - 20 to 110°F (7 to 43°C), with relative humidity ranging from 30% - 60%.
- Where the integrity of the external protective earth conductor arrangement is in doubt, equipment shall be operated from its internal electrical power source.
- DO NOT disassemble, modify, or remodel the unit or accessories. This may cause unit damage, malfunction, electrical shock, fire, or personal injury.
- Failure to use and maintain the Vectra Genisys Laser and its accessories in accordance with the instructions outlined in this manual will invalidate your warranty.

⚠ CAUTION

- DO NOT remove the cover. This may cause unit damage, malfunction, electrical shock, fire, or personal injury. There are no user-serviceable parts inside the unit. If a malfunction occurs, discontinue use immediately and consult the dealer for repair service.
- DO NOT permit any foreign materials or liquids to enter the unit. Take care to prevent any foreign materials including, but not limited to, inflammables, water, and metallic objects from entering the unit. These may cause unit damage, malfunction, electrical shock, fire, or personal injury.
- If you have difficulty operating the unit after carefully reviewing this user manual, contact your Chattanooga Group dealer for assistance.
- U.S. federal law restricts this device to sale by, or on the order of, a physician or licensed practitioner.
- This unit generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. Harmful interference to other devices can be determined by turning this unit on and off. Try to correct the interference using one or more of the following: reorient or relocate the receiving device, increase the separation between the equipment, connect the equipment to an outlet on a different circuit from that which the other device(s) are connected and consult the Chattanooga Group Service Department for help.
- Use of parts or materials other than Chattanooga Group's can degrade minimum safety.

⚠ WARNING

- Before each use, clean the plastic lens with NOVUS® Polish System (www.novuspolish.com). Apply with a clean cloth. Failure to clean the lens between patient therapy sessions could cause beam fragmentation.
- Be sure to read all instructions for operation before treating a patient.
- Do not drop the applicator or unit on hard surfaces. Do not submerge the applicator or unit in water. All of these conditions will damage the applicator and unit. Damage resulting from these conditions is not covered under the warranty.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure to laser light energy.
- Make certain that the unit is electrically grounded by connecting only to a grounded electrical service receptacle conforming to the applicable national and local electrical codes.
- This device should be kept out of the reach of children.
- This device should be used only under the continued supervision of a licensed practitioner.

WARNING

- Dispose of all products in accordance with local and national regulations and codes.
- This equipment is not designed to prevent the ingress of water or liquids. Ingress of water or liquids could cause malfunction of internal components of the system and therefore create a risk of injury to the patient.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous conditions causing damage to the unit and applicator.
- Care must be taken when operating this unit adjacent to or stacked with other equipment. Potential electromagnetic or other interference could occur to this or other equipment. Try to minimize this interference by not using other equipment (i.e. cell phones, etc.) in conjunction with it.
- Use only accessories that are specially designed for this unit. Do not use accessories manufactured by other companies on this (table, unit, device, etc). Chattanooga Group is not responsible for any consequence resulting from using products manufactured by other companies. The use of other accessories or cables may result in increased emissions or decreased immunity of this unit.
- Use of other accessories other than those specified may result in increased emissions and decreased immunity.
- If laser is not in use, power off unit or remove applicator.
- Laser equipment not in use should be protected against unqualified use.
- Remove battery pack if unit is not to be used for an extended period.
- Some patients are more sensitive to laser output (i.e., patients taking medications that increase sensitivity to light) and may experience a reaction similar to a heat rash.
- Do not treat through clothing.
- Stop treatment immediately if patient experiences discomfort or pain.
- Do not apply laser on an area of skin that has lotion or ointments applied, as burns may occur.
- Do not use on or over a tattoo.
- Inspect the plastic lens of the laser head for blemishes, deformation, pitting, scratches, discoloration and cleanliness before each use.
- The laser head must be cleaned with a disinfectant cleaner (i.e. Virex® II 256) or germicidal cloth (i.e. PDI Sani-Cloth® Plus/Hb) between each therapy session. Ensure that no liquids enter into the laser head while cleaning. Do not use any chlorine-based cleaners on the laser head.
- The following factors may affect laser treatment: color of skin, age of lesion, depth of lesion, sensitivity of the patient, tissue type and medications that increase sensitivity to light.

⚠ DANGER

- Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen, or nitrous oxide.
- The solvents of adhesives and flammable solutions used for cleaning and disinfecting should be allowed to evaporate before the unit is used.
- DO NOT connect the unit to an electrical supply without first verifying that the power supply is the correct voltage. Incorrect voltage may cause unit damage, malfunction, electrical shock, fire, or personal injury. Your unit was constructed to operate only on the electrical voltage specified on the Voltage Rating and Serial Number Plate. Contact your Chattanooga Group dealer if the unit is not properly rated.

- Laser protective eyewear should be worn by the operator and patient to block infrared light energy from the eyes during treatment.
- DO NOT point the laser light beam directly into human or animal eyes. The lens of the eye does not detect the invisible, coherent laser light beams, potentially resulting in permanent retinal damage.

- This unit is considered to be a Class 3B laser light product and thus emits visible and invisible laser light radiation (IR). Avoid direct eye exposure to the laser light beam. The symbol to the left is located on the back of the applicator and indicates the active radiant surface (the area on the applicator that emits infrared laser light energy and the direction of the beam of light).
- When the unit is on, not all wavelengths are visible to the naked eye. Therefore, when performing any operational or functional check, always wear Chattanooga Group laser protective eyewear.

OVERVIEW OF LASER LIGHT THERAPY

In short, the light energy absorbed into the patient's tissue triggers biological changes at a cellular level to provide topical heating for the temporary increase in local blood circulation; temporary relief of minor muscle and joint aches, pains, and stiffness; relaxation of muscles and relief of muscle spasms; and temporary relief of minor pain and stiffness associated with arthritis. The dose and frequency of treatment can be adjusted to produce the desired effect.

Low Level Laser Light differs from ordinary light in four ways. Briefly, it is much more intense, directional, monochromatic and coherent. Most lasers consist of a column of active material with a partly reflecting mirror at one end and a fully reflecting mirror at the other. The active material can be solid (ruby crystal), liquid or gas (HeNe, CO_2 etc.).

Low Level Laser Light has unique physical properties that no ordinary light has. This is the key to why laser light is so effective compared to other kinds of light in healing. There are more than 100 double-blind positive studies confirming the clinical effect of LLLT (Low Level Laser Therapy). More than 2500 research reports are published. The book ***Laser Therapy - clinical practice and scientific background*** by Jan Tunér and Lars Hode is a good reference guide for literary documentation.

There is no exact limit with respect to the penetration of the light. The light gets weaker the further from the surface it penetrates. There is, however, a limit at which the light intensity is so low that no biological effect of the light can be registered. This limit, where the effect ceases, is called the greatest active depth. In addition to the factors mentioned above, this depth is also contingent on tissue type, pigmentation, and dirt on the skin. Fat tissue is more transparent than muscle tissue.

Some laser applicators may cause a noticeable heat sensation, particularly in hairy areas and on sensitive tissues such as lips.

Common Terms

Applicator - The hand held assembly used to deliver laser light energy. The applicator includes the laser head, diode, and related electronics.

Collimating - The shape of the laser light beam. While neither focused nor dispersed, this laser light beam resembles a column when applied from the unit through the applicator.

OVERVIEW OF LASER LIGHT THERAPY (CONTINUED)

Continuous Mode – The output of the laser light is not interrupted during the treatment time.

Dosage – A measure of the intensity of the laser light energy over the treatment area. The unit of measure is Joules or Joules/cm^2.

Energy – Measured in Joules, energy equals the treatment time multiplied by the power. More importantly, Energy Density equals the power output multiplied by the treatment time, and divided by the spot size (cm^2). This gives a more specific measurement of energy delivered.

Frequency – Pulsed frequencies are selectable from 8 to 10,000 Hz.

Laser Head – The clear lens face of the applicator that contacts the patient's skin. It consists of laser diodes with or without LED's or SLD's (depending on the applicator).

Power – Measured in Watts (W), power wattage is directly proportional to the treatment time and penetration of the laser light energy. High-powered diodes will reduce patients' treatment time and give a higher amount of energy at a deeper depth. Power output can be either continuous or pulsed.

Power Density - Ratio of power divided by treatment time.

Pulsed Mode – This is the ratio of the "On" time to "Total" time of the cycle, expressed as a percentage. The lower the percentage, the lower temporal average intensity. 100% is continuous laser light. Pulsed Mode is 90% on and 10% off.

NOTE: Pulsed Mode is also equivalent to Duty Cycle.

Spot Size - Area of the LED, SLD, or laser beam when it leaves the face of the lens.

Treatment Area - Area of tissue affected by LED, SLD, or laser when wavelength, divergence angles, and depth of penetration are factored. This is the area used to calculate dosage.

Treatment Time – Measured in seconds, it is the suggested time per laser point that therapy is given.

OVERVIEW OF LASER LIGHT THERAPY - COMMON TERMS (CONTINUED)

Wavelength – Measured in nanometers (nm), wavelength is the key component in obtaining effective therapy as different wavelengths bring about different physiological effects. Superficial skin disorders have been found to be most effectively treated at wavelengths 600-700 nm, while deeper muscular or ligament lesions and joint conditions are better treated at higher wavelengths of 700-1000 nm.

Indications for Laser Light

The Vectra Genisys Laser is indicated to provide topical heating for the following:

- temporary increase of local blood circulation.
- temporary relief of minor muscle and joint aches, pains, and stiffness.
- temporary relaxation of muscles.
- temporary relief of muscle spasms.
- temporary relief of minor pain and stiffness associated with arthritis.

Adjunctive Use

The Vectra Genisys Laser may be used adjunctively for the following:

- symptomatic relief of minor pain
- minor muscle and joint pain
- minor muscle spasms
- relief of associated minor stiffness and pain associated with arthritis
- promoting relaxation of muscles

Contraindications

The Vectra Genisys Laser should NOT be used:

- where analgesia may mask progressive pathology, and where the practitioner would normally avoid the use of any other analgesia in order to retain the beneficial aspects of pain.
- for direct aim into the eyes of humans or animals.
- over areas injected with steroids in the past 2-3 weeks.
- over areas that are suspicious or contain potentially cancerous tissue.
- over areas of active hemorrhage.
- over a pregnant uterus.
- over the neck (thyroid or carotid sinus region) or chest (vagus nerve or cardiac region of the thorax).
- directly over areas with open wounds, unless covered with a clear protective barrier.
- treatment over sympathetic ganglia.
- for symptomatic local pain relief unless etiology is established or unless a pain syndrome has been diagnosed.
- on patients suspected of carrying serious infectious disease and or disease where it is advisable, for general medical purposes, to suppress heat or fevers.
- over or near bone growth centers until bone growth is complete.

- over the thoracic area if the patient is using a cardiac pacemaker.
- over or applied to the eye.
- on ischemic tissues in individuals with vascular disease where the blood supply would be unable to follow the increase in metabolic demand and tissue necrosis might result.

Additional Precautions

Additional precaution should be used when the laser light is used on patients with the following conditions:

- Over an area of the spinal cord following a laminectomy, i.e., when major covering tissues have been removed.
- Over anesthetic areas.
- On patients with hemorrhagic diatheses.

⚠ DANGER

Patients with an implanted neurostimulation device must not be treated with or be in close proximity to any shortwave diathermy, microwave diathermy, therapeutic laser diathermy or laser diathermy anywhere on their body. Energy from diathermy (shortwave, microwave, ultrasound, and laser) can be transferred through the implanted neurostimulation system, can cause tissue damage and can result in severe injury or death. Injury, damage, or death can occur during diathermy therapy even if the implanted neurostimulation system is turned "off."

Preventing Adverse Effects

Perform the following procedures to avoid the negative effects of laser light therapy:

Patient Susceptibility

⚠ WARNING

Some patients are more sensitive to laser output (i.e., patients taking medications that increase sensitivity to light) and may experience a reaction similar to a heat rash.

Be sure to inspect the treatment area during and following treatment, and discontinue if an adverse reaction does occur.

Output Power

Higher output levels have a greater potential for patient

discomfort. Choose a lower dosage to reduce output or select a pulsed duty cycle to decrease patient discomfort.

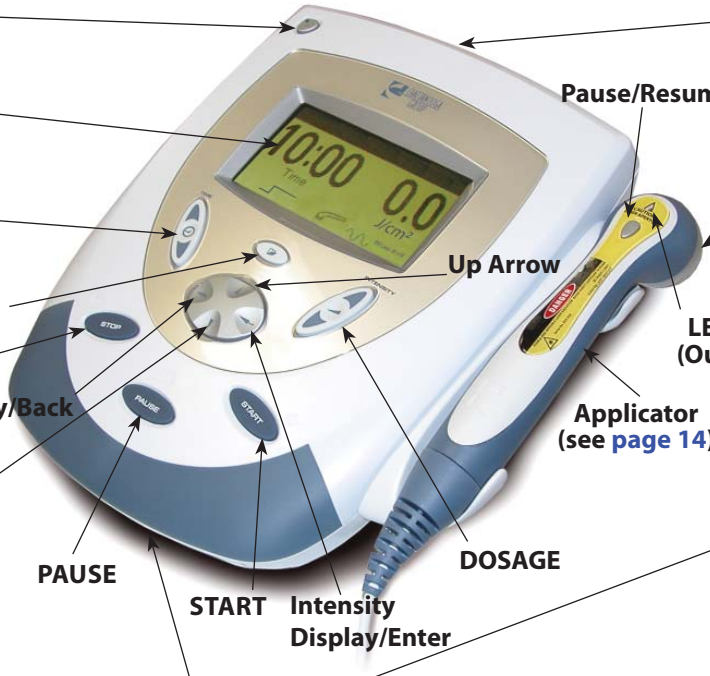
Factors that Affect Treatment

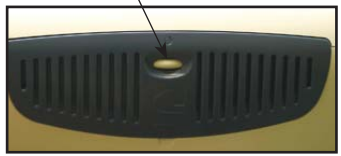
The following factors may affect laser light treatment:

- Color of skin (light or dark)
- Age of lesion
- Depth of lesion
- Sensitivity of patient
- Type of tissue
- Medications that increase sensitivity to light

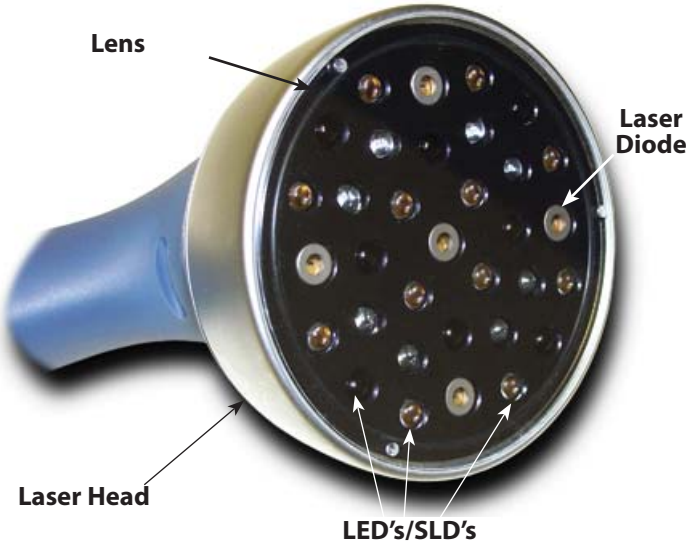
NOMENCLATURE

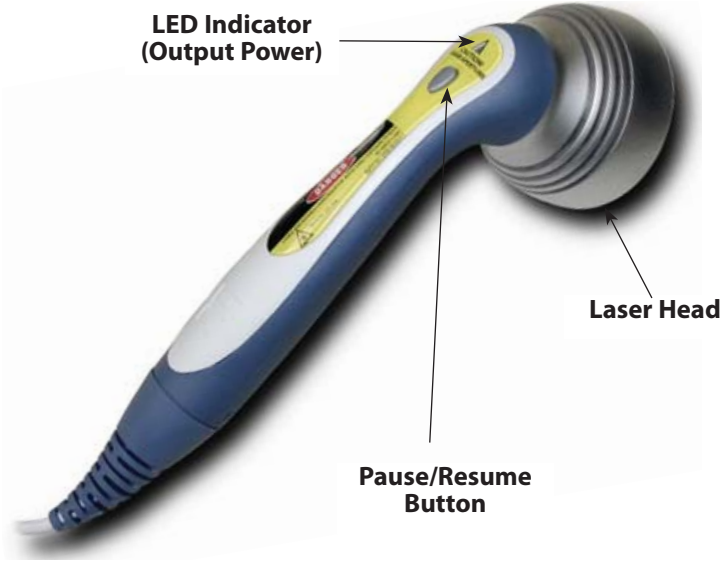
UNIT





APPLICATOR


Lens
Laser Diode
Laser Head
LED's/SLD's


LED Indicator (Output Power)
Laser Head
Pause/Resume Button

Power On/Off

The Power On/Off button controls the flow of electricity to the unit.

LCD

The LCD (Liquid Crystal Display) allows the user to view and monitor the information displayed during laser light therapy. The following information is displayed on the LCD:

- Frequency
- Duty Cycle
- Dosage
- Treatment Time
- Clinical Indications

Time

Press the Up or Down arrow buttons to set total treatment time of therapy.

Clinical Resources

Select this button to access the following functions:

- Clinical Indications
- Utilities
- Retrieve User Protocols
- Save User Protocols

Use the Up and Down arrow buttons to navigate through the available options.

STOP

Select this button to stop a treatment session.

Frequency/Back

Use this button to return to the previous window and toggle between 12 preset frequencies.

Down Arrow

When the window displays a list of options, press the Down Arrow button to scroll down the list.

PAUSE

Use this button to pause the treatment session. When pressed, the

icon displays. To restart therapy, press the PAUSE button.

Accessory Panel

The Accessory Panel serves as a port of connection for the various accessories.

Laser Interlock (Door Interrupt Switch Connection)

This option allows you to set up a switch (similar to the laser stop switch) that interrupts treatment when the door of the treatment room is opened during a therapy session.

Laser Stop Switch Connection

As a safety measure and to minimize any apprehension, it is recommended that you always allow the patient to hold the Laser Stop Switch during laser light therapy. When the red button on the end of the switch is pressed, a beeper sounds and the treatment is paused. Parameters can then be verified and changed (if necessary) and therapy can be resumed.

The Laser Stop Switch is very sensitive. Explain this to the patient when using it in order to prevent unnecessary interruptions in treatment.

Applicator Connection
This port serves as the connection point between the unit and the applicator.

START
Select Start to begin a treatment session.

Intensity Display/Enter
Select this button to change display from J/cm² to Joules. Also, this button is used to accept the highlighted selection.

Dosage
Use the Up or Down arrow to increase or decrease output power dosage.

Applicator
The hand held assembly used to deliver laser light energy. The applicator includes the laser head, diode, and related electronics.

Up Arrow
When the window displays a list of options, press the Up Arrow button to scroll up the list.

Battery Indicator
When displayed on the LCD, this symbol indicates the battery pack option is present on the Vectra Genisys® Laser. This symbol also displays the charge status of the battery.

LCD Intensity/Contrast Dial
If the intensity of the LCD display diminishes, turn the dial until the display contrast is optimal.

Charge Indicator
This symbol displays when the unit is connected to mains power and the battery pack is charging.

NOTE: During battery operation, if the unit is left on, but not active, for more than five minutes, it will power off to conserve battery power. To restore power, press the Power On/Off button.

Applicator Symbols
These symbols denote the status of the Laser Applicator.

This symbol indicates that therapy is in progress, output is being distributed to the patient, and the applicator is functioning normally.

This symbol indicates that although the applicator is plugged in, no laser light energy is being emitted from the applicator.

This symbol indicates that the Pause button has been pressed, and no output is being emitted from the applicator.

This symbol indicates that the applicator has been unplugged from the unit.

Lens
This clear lens acts as a shield to protect the patient's skin.

Laser Head
This aluminum housing located on the end of the applicator accommodates the lens, laser diodes, LED's, SLD's, and their associated electronics.

Pause/Resume
Use this button to begin or pause the treatment session. To restart therapy, press the PAUSE button.

LED's/SLD's
These Light Emitting Diodes generate different wavelengths of light that allow the user to treat topical or surface symptoms.

Laser Diode
This mechanism generates different wavelengths of light that allow the user to treat various, deeper penetrating symptoms.

LED Indicator (Output Power)
This orange light illuminates when laser light energy is being distributed by the applicator.

UNIT SPECIFICATIONS

DIMENSIONS

Height (with base)..... 6.4 in (16.3 cm)

Width (with applicator)..... 11.3 in (28.8 cm)

Width (without applicator)..... 9.4 in (23.9 cm)

Depth (front to rear)..... 12.9 in (32.8 cm)

WEIGHT

Standard Weight (with applicator and base)..... 5.07 lb (2.3 kg)

Battery Pack..... 1.87 lb (0.85 kg)

POWER

Input.....120 - 240 V ~, 50/60 Hz 75 VA

Electrical Class.....CLASS 1

Electrical Type.....TYPE B

Output Type..... Infrared Lamp (laser)

Laser Class..... 3B

Battery Type.....Nickel Metal Hydride (NiMH) (1.2 V x 20 size AA)

Complies with 21CFR 1040.10 & 1040.11
IEC/UL/EN 60601-1, 60601-1-2, and 60601-2-22
IEC 60825-1:2001, CAN/CSA C22.2 No. 601.1-M90 w/A2

Each unit is shipped with repositional base, laser protective eyewear, laser stop switch, and this manual.

For a complete list of standard and optional accessories, see page 61.

CE 0413

SPECIFICATIONS

LASER TECHNICAL SPECIFICATIONS

Duty Cycles

Pulsed 90%

Continuous 100%

Pulse Frequencies ..... 8 Hz - 10000 Hz ..... and continuous.

Wavelengths ..... 670-950 nm (dependent on applicator)

Output ..... 100-1440 mW (dependent on applicator)

Output accuracy ..... +/- 20% of nominal

DESCRIPTION OF DEVICE MARKINGS

The markings on the unit are assurance of its conformity to the highest applicable standards of medical equipment safety and electromagnetic compatibility. One or more of the following markings may appear on the device:

Standards:

Classified by Intertek Testing Services NA Inc.

Complies with 21CFR 1040.10 & 1040.11

IEC/UL/EN 60601-1, 60601-1-2, and 60601-2-22

CAN/CSA C22.2 No. 601.1-M90 w/A2 0413

9700675

Refer to ACCOMPANYING DOCUMENTS .....

Equipment capable of delivering output values in excess of 10 mA r.m.s. or 10V r.m.s. averaged over any period of 5 s

Type B Equipment .....

This unit is considered to be a Class 3B laser product and thus emits visible and invisible laser radiation (IR). Avoid direct eye exposure to the laser light beam. The symbol to the right is located on the back of the applicator and indicates the active radiant surface (the area on the applicator that emits infrared laser energy and the direction of the beam of light) .....

LASER APPLICATOR SPECIFICATIONS

For all single diode and cluster laser and LED applicators, the expected increase in the measured quantities after manufacture added to the values measured at the time of manufacture is ±20%.

The new software incorporates a cooling function that forces the user to cool the laser clusters prior to the next treatment. The software will calculate the cooling time needed when treatment times exceed 3 minutes per application. For a 3 minute treatment, it will force a 15 second cool down period before the next treatment can begin. For a 4 minute treatment, it will force a 2 minute cool down period before the next treatment can begin. The software extrapolates for times between 3 and 4 minutes.

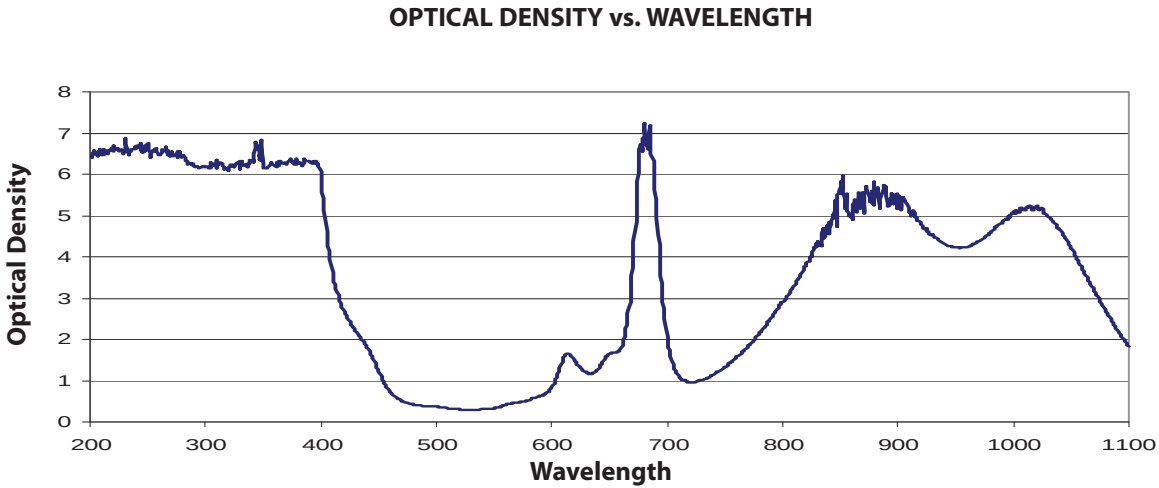
A message will display on the screen informing the user that the probe is cooling down and the time period required. After 5 seconds, this message will disappear. If the user attempts to use the probe before the cool down period is completed, the message will re-display to signify that the applicator is still in cool down mode. After the cool down period is complete, a message displays that informs the user that the unit is ready for use.

Single Diode Applicators									
Applicator	Wavelength (nm)	Output Power (mW)	Power Density (W/cm^2)	Treatment Area (cm^2)	Diode Type	Nominal Ocular Hazard Distance (NOHD-in meters for AEL<.0175 W/cm^2)	Divergance a1 (rad)	Divergance a2 (rad)	Spot Size (cm^2)
850 nm 100 mW Laser	850	100	1.43	0.07	GaAlA	6.2218	0.097	0.54334	0.012
850 nm 150 mW Laser	850	150	2.14	0.07	GaAlA	8.8	0.097	0.54334	0.012
850 nm 200 mW Laser	850	200	2.85	0.07	GaAlA	12.44	0.097	0.54334	0.0376
820 nm 300 mW Laser	820	300	0.606	0.495	GaAlA	15.24	0.097	0.54334	0.242

LASER APPLICATOR SPECIFICATIONS (CONTINUED)

Cluster Diode Applicators									
Applicator	Output Power (mW)	Power Density (W/cm²)	Contact Area (cm²)	Diode Type	Diode Specifications	Nominal Ocular Hazard Distance (NOHD-in meters for AEL<.0175 W/cm²)	Divergance a1 (rad)	Divergance a2 (rad)	Spot Size (cm²)
9 Diode Cluster Laser 540 mW	540	0.072	7.55	GaAlAs SLD LED	Four 670 nm (10 mW) LED Five 850 nm (100 mW) Laser	6.2218	0.097	0.54334	0.64 0.06
9 Diode Cluster Laser 1040 mW	1040	0.138	7.55	GaAlAs SLD LED	Four 670 nm (10 mW) LED Five 850 nm (200 mW) Laser	12.4438	0.097	0.54334	0.64 0.188
13 Diode Cluster Laser 415 mW	415	0.055	7.55	GaAlAs SLD LED	Seven 670 nm (10 mW) LED Three 850 nm (100 mW) Laser Three 950 nm (15 mW) SLD	6.2218	0.097	0.54334	1.12 0.136 0.48
13 Diode Cluster Laser 715 mW	715	0.095	7.55	GaAlAs SLD LED	Seven 670 nm (10 mW) LED Three 850 nm (200 mW) Laser Three 950 nm (15 mW) SLD	12.4438	0.097	0.54334	1.12 0.1128 0.48
33 Diode Cluster Laser 1440 mW	1440	0.046	31.2	GaAlAs SLD LED	Twelve 670 nm (10 mW) LED Eight 880 nm (25 mW) SLD Eight 950 nm (15 mW) SLD Five 850 nm (200 mW) Laser	12.4438	0.097	0.54334	1.92 1.28 1.28 0.06

LASER PROTECTIVE EYEWEAR SPECIFICATIONS



Useful Range

Optical Density 5+ ..... 190-400 nm
Optical Density 3+ ..... 625-830 nm
Optical Density 3+ ..... 815-1050 nm

Each unit is shipped with Laser Protective Eyewear. The eyewear is L3 rated and approved and EN207 compliant.

CE 0413

INSTALLING THE LASER INTERLOCK (DOOR INTERRUPT SWITCH)

The Laser Interlock is an optional safety device designed to interrupt Laser Light Therapy anytime the door to the the therapy room is opened. Contact only qualified electricians to install the Laser Interlock kit and have them refer to the wiring diagram below.

The Laser Interlock kit consists of a switch resistor and a jack. You must supply the necessary cable that complies with local and international codes.

⚠ DANGER

The Laser Interlock must be installed by a professional or qualified electrician. Serious eye injury can result if the device is not properly installed. Also, when installing the device for multiple doors, the resistance total may not exceed 4800 ohm.

Diagram for Therapy Room with One Door

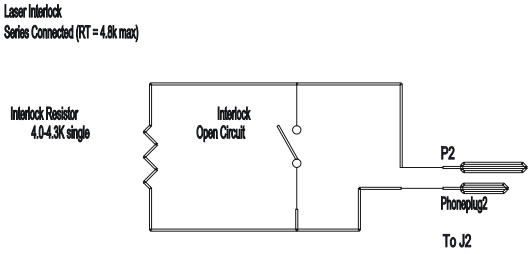
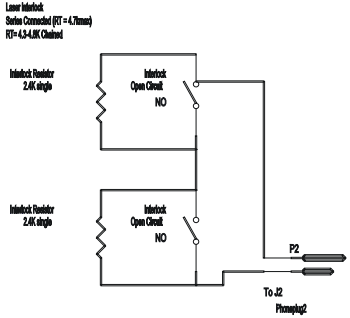


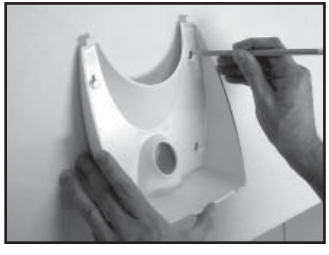
Diagram for Therapy Room with Multiple Doors



MOUNTING THE UNIT ON THE WALL

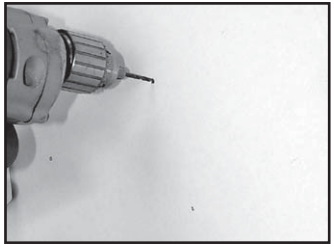
The Vectra Genisys Laser can be operated while the unit is resting on a flat surface, or mounted on a wall. To mount the unit on a wall, do the following:

1. Remove the repositional base from the bottom of the unit.

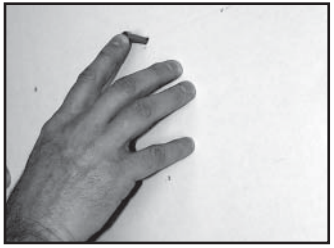


2. Using the repositional base as a guide, mark the 4 wall holes with a pencil or pen.

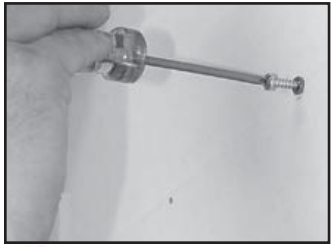
MOUNTING THE UNIT ON THE WALL (CONTINUED)



3. Using a 9/64 (3.6 mm or 0.357 cm) drill bit, drill four holes you marked in the previous step.



4. Press 4 appropriately sized sheetrock anchors into the wall so that the sheetrock anchor is flush with the wall.



5. Screw four #8 flathead wood screws (1 inch or 2.54 cm) into the wall anchors. Make sure you leave 1/4 of an inch (0.635 cm) between the wall and the head of the screw.

MOUNTING THE UNIT ON THE WALL (CONTINUED)

6. Replace the repositional base on the bottom of the unit.

7. Line up the screw heads with the holes on the repositional base, and slide the unit down slightly until the screw heads are securely fastened to the repositional base.

INSTALLING THE BATTERY PACK

The Vectra Genisys Laser accommodates both AC mains power and an optional battery pack. The pack contains 20 Nickel Metal Hydride (NiMH) drycell batteries. The unit can operate with the rechargeable power supply for approximately five hours of continuous use.
To install the battery pack in the Vectra Genisys Laser, do the following:

1. Locate the battery access door at the bottom of the unit and loosen the screw with a regular screwdriver.

2. Remove the battery access door and retain this cover.

INSTALLING THE BATTERY PACK (CONTINUED)

3. Connect the battery pack cable to the unit's battery connector in the bottom of the battery recess.

4. Put the battery pack into the unit, making sure to orient it as shown.

5. Replace the battery access door and re-tighten the screw using the screwdriver.

6. Reverse the steps in this section in order to remove the battery pack.

CHARGING & USING THE BATTERY PACK

CHARGING THE BATTERY PACK

The battery pack is automatically charged by the unit whenever there is mains power connected. Charging may be interrupted during operation of the unit by the control circuitry to limit total power consumption. A fully charged battery will provide 2-5 hours of treatment depending on the power, pulsed mode, and frequency used.

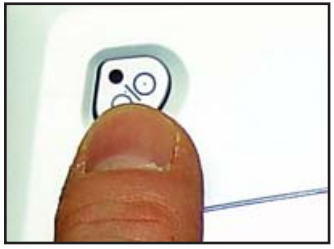
NOTE: Even when the battery pack is connected, the unit will default to mains power.

USING THE BATTERY PACK

To save battery power, the Vectra Genisys Laser is equipped with a "power off" function. This function is activated when the unit is powered on and has been left idle for approximately 5 minutes, at which time the unit powers off. To restore power, press the Power On/Off button.

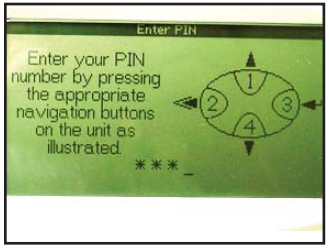
ENTERING AND CHANGING THE PIN

To gain access to any part of the Vectra Genisys Laser unit, you must enter a Personal Identification Number (PIN). The unit is shipped with a default PIN that allows you initial access, but you may change the number anytime. To enter and change the PIN, do the following:



1. Turn the system power "ON" by pressing the Power On/Off button.

   The unit displays the message "Initializing System." Then, the Enter PIN window displays.



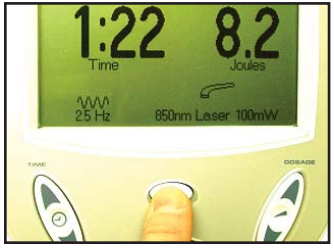
2. 1 1 1 1 is the default PIN. Press the button representing the number 1 four times so that * * * * displays briefly.

   The main window displays.

   If you enter the wrong PIN, the message "Incorrect PIN was entered. Please try again. Press any key to continue" displays. Press any key on the Operator Interface.

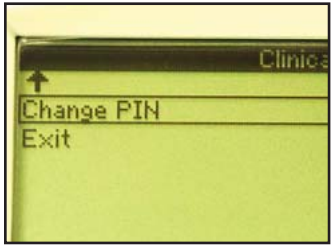
   NOTE: If you lose or forget your PIN, contact Chattanooga Group Service Department at (866) 864-0598 or (423) 870-2281.

ENTERING AND CHANGING THE PIN (CONTINUED)

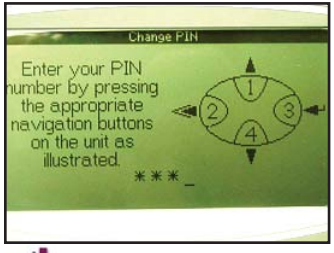


3. Press the Clinical Resources button.

   The Clinical Library window displays.



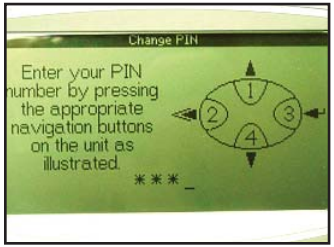
4. Using the Up Arrow and Down Arrow buttons, highlight Change PIN.



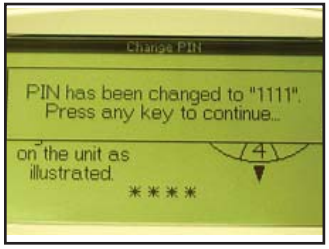
5. Press the Display (Enter) button to select the highlighted selection.

   The Change PIN window displays.

ENTERING AND CHANGING THE PIN (CONTINUED)



6. Press the buttons that represent the numbers to which you want to change the PIN.



Once you enter four numbers, a message displays to inform you of the new PIN.

7. Press any key on the Operator Interface.

   You are returned to the Clinical Library window.

PREPARING THE PATIENT'S SKIN FOR LASER LIGHT THERAPY

Before applying laser light therapy to the patient, you must first prepare the patient's skin. By properly preparing the patient's skin for laser light therapy, you will allow more laser light energy to reach the targeted areas and reduce the risk of skin irritation.

To prepare the patient's skin for laser light therapy, do the following:

1. Thoroughly wash the skin on which you intend to place the laser head with mild soap and water or alcohol wipe.
2. Dry the skin thoroughly.

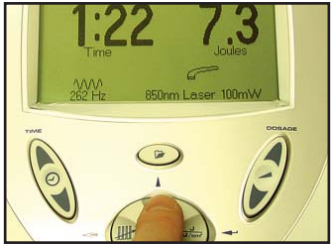
⚠ WARNING

Before each use, clean the plastic lens with NOVUS® Polish System (www.novuspolish.com). Make certain to apply with a clean cloth. Failure to clean the lens between patient therapy sessions could cause beam fragmentation, which may reduce the effectiveness of the treatment.

STARTING, STOPPING, AND INTERRUPTING THERAPY

The LCD will provide continuous information during the treatments concerning dosage and elapsed time. Parameters are adjusted using Operator Interface buttons on the front of the unit. The laser light output can be stopped by pressing the PAUSE or STOP buttons located on the Operator Interface.

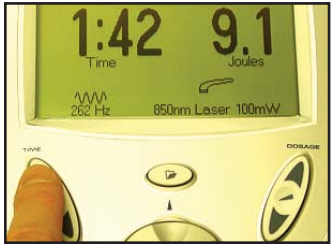
To apply laser light therapy, do the following:



1. Plug the Laser Stop Switch into the connection of the unit. If the switch is depressed, the treatment will be paused and a message will appear on the screen. Press any button to clear the message.

2. Press the Frequency button to select one of the 12 preset frequencies. Press the Up Arrow button to increase the frequency in 1 Hz increments. Hold the button down to quickly display higher frequencies. Press the Down Arrow button to decrease the frequency in 1 Hz increments. Hold the button down to quickly display lower frequencies.

   An audible tone will be heard when changes are made.



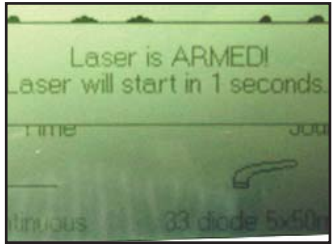
3. Press the TIME button and raise or lower treatment time using the up and down arrows.

   NOTE: The Treatment Time and the Dosage are directly correlated. Whenever Treatment Time is changed, the Dosage is automatically changed and reflected on the window.

STARTING, STOPPING, AND INTERRUPTING THERAPY (CONTINUED)

4. Press the DOSAGE button and raise or lower the unit's output using the up and down arrows.

NOTE: The Dosage and the Treatment Time are directly correlated. Whenever Dosage is changed, the Treatment Time is automatically changed and reflected on the window.



5. Press the START button. A message displays to alert you to the fact that the laser is armed. The unit will beep two times to count down the number of seconds left until the applicator is ready, and an orange light will blink two times on the back of the applicator. Press the Pause/Resume button to begin the treatment.

After you press the Pause/Resume button, the orange light will illuminate on the back of the applicator to indicate that laser light output is being distributed.

NOTE: When treatment time has expired, a tone will sound.

The therapy can be interrupted at any time by pressing the Pause/Resume button on the back of the applicator, the STOP button (on the Operator Interface), or the PAUSE button (on the Operator Interface).

When the STOP button is pressed, the applicator stops emitting laser light energy, and the unit returns to the default settings. To resume therapy, press the Start button.

During treatment, the following occurs whenever the PAUSE button on the Operator Interface or the Pause/Resume button on the back of the applicator are pressed:

STARTING, STOPPING, AND INTERRUPTING THERAPY (CONTINUED)

- the timer pauses
- the unit beeps once
- the P icon displays
- the laser applicator stops emitting laser light energy
- the orange light goes out

To resume therapy, press the PAUSE button on the Operator Interface, the Pause/Resume button on the back of the laser applicator, or the START button.

6. To finish the laser light therapy, press the STOP button.

USING CLINICAL INDICATIONS

The indications contained in this section are to be used only as guidelines.

Each patient should be individually assessed to determine the appropriateness of the parameter setting prior to use.

To select an indication for a patient, do the following:

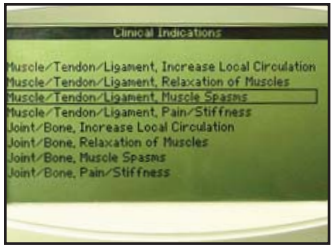
1. Press the Clinical Resources button.

   The Clinical Library window displays.

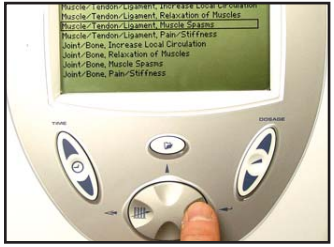
2. Using the Up Arrow and Down Arrow buttons, highlight Clinical Indications and press the DISPLAY (Enter) button.

   The Clinical Indications menu displays.

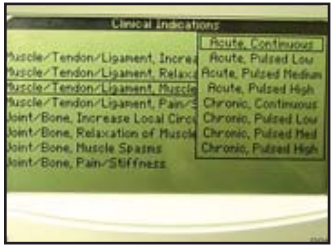
USING CLINICAL INDICATIONS (CONTINUED)



3. Using the Up Arrow and Down Arrow buttons, highlight the appropriate indication. The indications displayed depend upon the applicator used.



4. Press the DISPLAY (Enter) button to accept the highlighted selection.

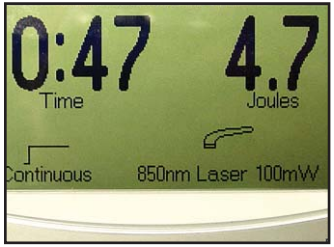


5. If available, highlight the appropriate laser light tissue depth with the indication you selected using the Up Arrow and Down Arrow buttons.

USING CLINICAL INDICATIONS (CONTINUED)

6. Press the DISPLAY (Enter) button to accept the highlighted selection.

   You are returned to the main window with the settings from the indication you selected displayed.



7. Review the final indication parameters for the laser light treatment. Make any necessary modifications or corrections.

8. Press the DOSAGE button (either the up or down arrow) to adjust the output to the prescribed dosage.

   NOTE: The Dosage and the Treatment Time are directly correlated. Whenever Dosage is changed, the Treatment Time is automatically changed and reflected on the window.

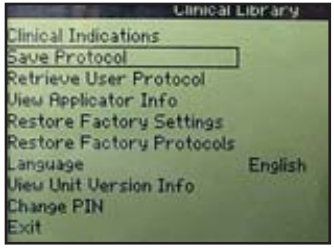
USING CLINICAL INDICATIONS (CONTINUED)

9. To begin therapy, continue with the instructions outlined in the section entitled "Preparing the Patient's Skin for Laser light Therapy" on page 35. Then, proceed to step 4 on page 37.

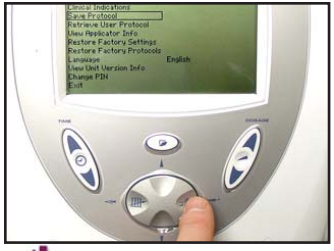
CREATING A USER PROTOCOL

This is a library you create. You may store up to 10 protocols in the User Protocol Library. To create User Protocols, do the following:

1. Make the desired parameter changes.
2. Press the Clinical Resources button.
   The Clinical Library window displays.

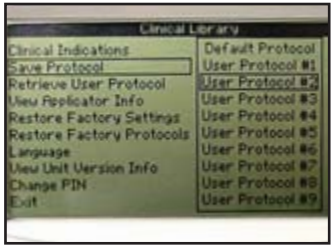


3. Press the Down Arrow or Up Arrow buttons to highlight the Save Protocol option.



4. Press the DISPLAY (Enter) button to accept the Save Protocol selection.
   The Save Protocol menu displays.

CREATING A USER PROTOCOL (CONTINUED)



5. Use the Up Arrow and Down Arrow buttons to highlight any unused user protocol.

   If you select Unit Default Protocol, this will become the protocol displayed when the unit powers up.

6. Press the DISPLAY (Enter) button to accept the highlighted selection and save your custom protocol.

   The User Protocol Confirmation window displays to indicate that the protocol is now saved as the number you specified.

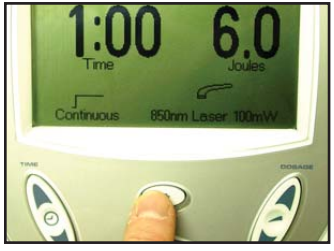
7. Press any button on the Operator Interface.

   The Clinical Library window displays and your new user-defined protocol is now saved.

RESTORING FACTORY SETTINGS

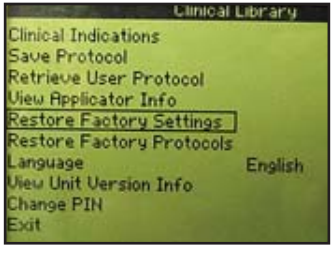
Certain default utility settings on the unit may be changed to suit your requirements. These settings consist of the unit's language and power up settings. However, you may want to return the unit to its original settings.

To restore the original power up default settings on the unit, do the following:



1. On the main window, press the Clinical Resources button.

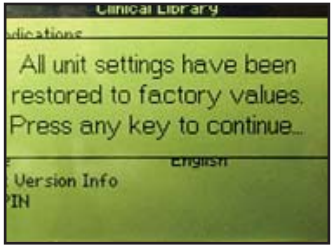
   The Clinical Library window displays.



2. Press the Up Arrow or Down Arrow buttons to highlight the Restore Factory Settings option.

RESTORING FACTORY SETTINGS (CONTINUED)

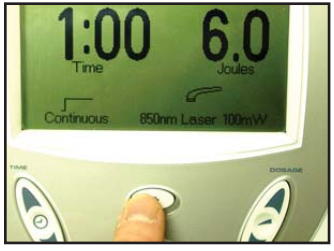
3. Press the DISPLAY (Enter) button to accept the highlighted selection.
   The Restore Factory Settings Confirmation window displays.



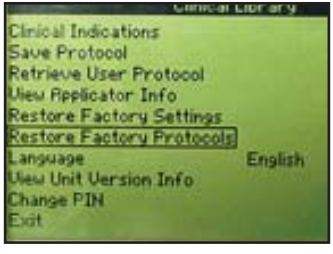
4. Press any button on the Operator Interface.
   The default power up settings are restored and you are returned to the Clinical Library window.

RESTORING FACTORY PROTOCOLS

If necessary, you can choose to restore the user-defined protocols to the unit's original parameters when it was shipped to you. To do this, do the following:



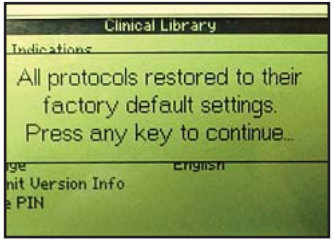
1. Press the Clinical Resources button.
   The Clinical Library window displays.



2. Press the Up Arrow or Down Arrow buttons to highlight the Restore Factory Protocols option.

RESTORING FACTORY PROTOCOLS (CONTINUED)

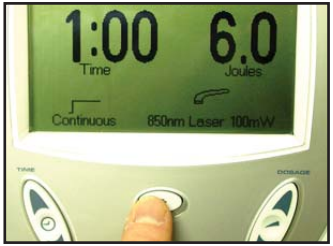
3. Press the DISPLAY (Enter) button to accept the highlighted selection.
   The Restore Factory Protocols Confirmation window displays.



4. Press any button on the Operator Interface.
   The user-defined protocols are erased and restored to the original parameters. You are returned to the Clinical Library window.

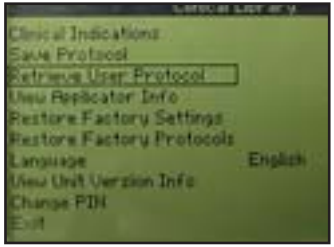
SELECTING A USER-DEFINED PROTOCOL

To select a predefined laser light therapy program, do the following:



1. Press the Clinical Resources button.

   The Clinical Library window displays.

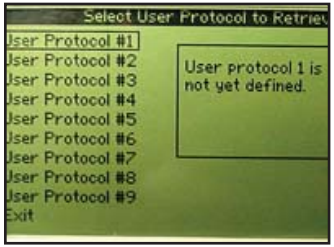


2. Use the Up Arrow and Down Arrow buttons to highlight the Retrieve User Protocol option.

3. Press the Display (Enter) button to accept the highlighted selection.

   A list of user-defined protocols displays.

SELECTING A USER-DEFINED PROTOCOL (CONTINUED)

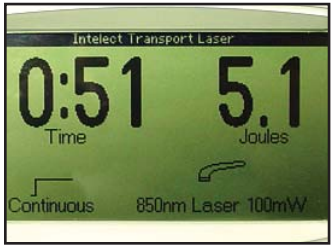


4. Use the Down Arrow button to highlight the appropriate protocol.

   As you highlight each protocol, a description of the protocol's parameters displays to the right.

5. Press the Display (Enter) button to select the highlighted protocol.

   The main window displays with the parameters of the protocol you selected.



6. Verify the parameters of this program, and use the appropriate buttons on the Operator Interface to adjust any setting, if necessary. For example, to adjust the time, press the up and down arrows on the TIME button.

7. To begin therapy, perform all the procedures outlined in the section entitled "Preparing the Patient's Skin for Laser light Therapy" on page 35. Then continue with step 4 of the section entitled "Starting, Stopping, and Interrupting Therapy" on page 37.

SYSTEM UTILITIES

Audible Tones

Audible tones will be heard in the following conditions:

- The laser is arming
- Any button is pressed.
- The rechargeable battery's power is low (in which case the Low Battery icon will display).
- Any error message is displayed.
- The therapy time reaches 0:00.
- The treatment session is paused or resumed.

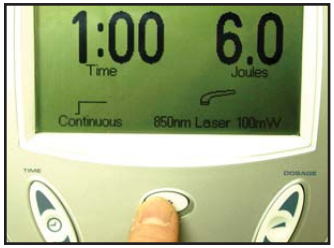
Changing Power-Up Presets

The following power up presets can be changed and stored as new presets:

- Frequency
- Treatment Time
- Dosage

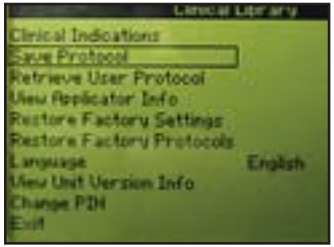
To change the power up presets, do the following:

SYSTEM UTILITIES (CONTINUED)



1. Make the desired changes.

2. Press the Clinical Resources button.
The Clinical Library window displays.



3. Press the Up Arrow and Down Arrow buttons to highlight Save Protocol, and press the DISPLAY (Enter) button to accept the highlighted selection.

The Save Protocol menu displays.

4. Press the Up Arrow or Down Arrow buttons to highlight Default Protocol.

SYSTEM UTILITIES (CONTINUED)

5. Press the DISPLAY (Enter) button to accept the highlighted selection.

   The User Default Protocol confirmation window displays.

6. Press any key to confirm the settings.

   You are returned to the Clinical Library window.

Brightening or Dimming the LCD

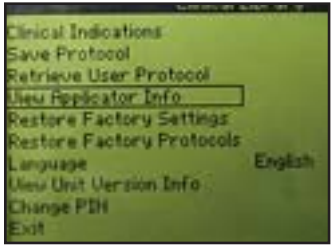
To brighten or dim the LCD, turn the contrast control dial until the display contrast is optimal.

SYSTEM UTILITIES (CONTINUED)

Viewing Applicator Information

Use this utility to verify applicator specifications. To do this, do the following:

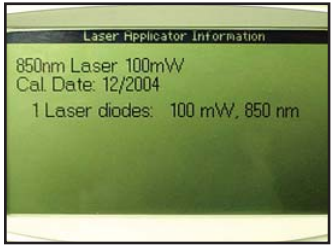
1. Press the Clinical Resources button.
   The Clinical Library window displays.



2. Press Up Arrow and Down Arrow buttons to highlight the View Applicator Info option.

SYSTEM UTILITIES (CONTINUED)

3. Press the DISPLAY (Enter) button to accept the highlighted selection.
   The Laser Applicator Information window displays.

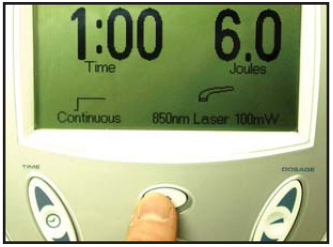


4. Verify the information on the window and press the Back button to return to the Clinical Library window.

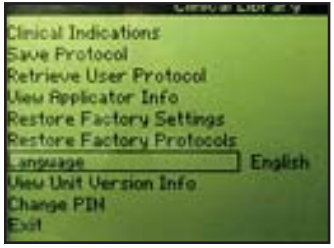
SYSTEM UTILITIES (CONTINUED)

Changing Languages

You may change the language displayed by the Vectra Genisys Laser to either English or Spanish. To change the language displayed on the LCD, do the following:



1. Press the Clinical Resources button.
   The Clinical Library window displays.

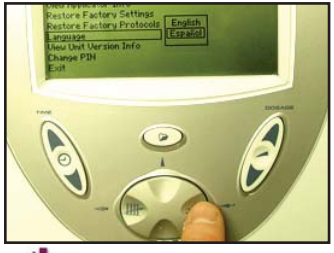


2. Use the Up Arrow and Down Arrow buttons to highlight the Language option.

SYSTEM UTILITIES (CONTINUED)

3. Press the DISPLAY (Enter) button to accept the highlighted selection.

4. Press the Up Arrow and Down Arrow buttons to highlight the appropriate language.



5. Press the DISPLAY (Enter) button to accept the highlighted selection.
Your unit now displays the language you selected.

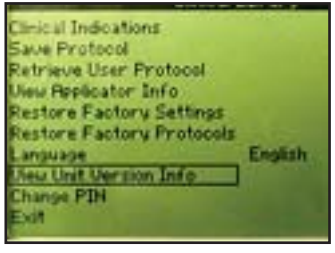
SYSTEM UTILITIES (CONTINUED)

Viewing Unit Version Information

Use this utility to verify that the unit is using the latest software available. To do this, do the following:

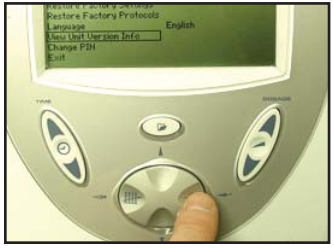
1. Press the Clinical Resources button.

   The Clinical Library window displays.



2. Use the Up Arrow and Down Arrow buttons to highlight the View Unit Version Info option.

SYSTEM UTILITIES (CONTINUED)



3. Press the Display button to accept the highlighted selection.

   The Unit Version Information window displays.

4. Press any key to return to the Clinical Library window.

TREATMENT TIPS

Contact
To obtain the most effective results, the applicator should be in contact with the patient's skin.

Applicator Position
Due to the characteristics of laser light, the angle at which the light enters the patient's skin is very important. Therefore, the applicator lens should always be parallel to the treatment area.

Treating Joints
If you are applying laser light therapy to a patient's joint, it is more effective to apply the laser light energy into the joint by positioning the joint in an open position (e.g., knee in flexion). However, do not attempt this method if it is uncomfortable to the patient.

Applicator Selection
If the injury you intend to treat is very small (pinpoint), you should only need to treat the area with a single diode applicator. If the area surrounding the treatment area is sensitive, it is recommended that you apply therapy with a single diode applicator first, then use the cluster applicator for the surrounding area.

Cold and Heat
If you intend to apply cold or heat in conjunction with laser light therapy, use the following guidelines:

- Use cold before laser light therapy. This slows the flow of red blood cells and reduces the amount of energy removed from the area.
- Use heat after the treatment. This speeds the flow of red blood cells so that more energy can be removed from the area.

Standard Accessories

Ref.	Description
28066	User Manual (CD-ROM)
27525	Laser Protective Eyewear
27325	Power Supply Cord (US) [18 AWG, 80 in (203.2 cm), Shielded]
27470	Laser Stop Switch [26 AWG, 68.89 in (174.143 cm), Shielded]

Optional Accessories

Ref.	Description
27805	Single Diode 820 nm Laser 300 mW Applicator [26 AWG, 68.89 in (174.143 cm), Shielded]
27840	Single Diode 850 nm Laser 100 mW Applicator [26 AWG, 68.89 in (174.143 cm), Shielded]
27804	Single Diode 850 nm Laser 150 mW Applicator [26 AWG, 68.89 in (174.143 cm), Shielded]
27841	Single Diode 850 nm Laser 200 mW Applicator [26 AWG, 68.89 in (174.143 cm), Shielded]
27811	9 Diode Applicator 540 mW [26 AWG, 68.89 in (174.143 cm), Shielded]
27812	9 Diode Applicator 1040 mW [26 AWG, 68.89 in (174.143 cm), Shielded]
27814	13 Diode Applicator 415 mW [26 AWG, 68.89 in (174.143 cm), Shielded]
27816	13 Diode Applicator 715 mW [26 AWG, 68.89 in (174.143 cm), Shielded]
27808	33 Diode cluster Applicator 1440 mW [26 AWG, 68.89 in (174.143 cm), Shielded]
27478	Battery Pack
27904K	Laser Interlock Kit
27468	Carrying Bag

ERRORS

Troubleshooting the Display

If you press the Power On/Off button, and the LCD remains blank longer than a few seconds, the contrast may require adjusting. To adjust it, turn the contrast control dial clockwise until the display contrast is optimal.

ERROR CODES AND DESCRIPTIONS			
Error Code	Description	Error Code	Description
100	entered an invalid PIN number	201	laser output is too high
101	tried to calibrate an applicator but none is plugged in	202	laser output is too low
102	applicator became unplugged during treatment	203	LED output is too high
103	attempted to save a protocol with no applicator plugged in	204	LED output is too low
104	pressed START but treatment time is zero	205	laser internal treatment time error occurred; laser treatment has been terminated
105	retrieved a user protocol but no applicator plugged in	300	some type of critical laser board error has occurred
106	retrieved a user protocol not previously saved and no applicator plugged in	301	no laser board is detected in unit
107	retrieved a user protocol for an applicator different from the applicator plugged in	302	error reading from laser board
108	user selected clinical indication but no applicator is plugged in	303	error reading from laser board
109	user selected clinical indication but there are not clinical indications for the probe plugged in	304	error writing to laser board
111	laser stop switch is unplugged. Plug in the laser stop switch before starting a laser treatment. Press any key to continue.	305	error calibrating applicator
200	error accessing the internal EPROM used to store system configuration settings and protocols		

Maintaining the Vectra Genisys Laser

The following items should be checked at least monthly to ensure proper operation of this unit:

- Power cord and plug: Check to make sure the cord is not frayed, kinked, and does not have torn or cut insulation.
- Applicator cable: Check to make sure the cable is flexible, free of kinks, not frayed, and the insulation is intact.
- Applicator lens: Check to see that there is no build-up of oil or foreign material on or behind the applicator lens.

⚠ WARNING

Before each use, clean the plastic lens with NOVUS® Polish System (www.novuspolish.com). Make certain to apply with a clean cloth. Failure to clean the lens between patient therapy sessions could cause beam fragmentation, which may reduce the effectiveness of the treatment.

Cleaning

To clean the accessories, use only soap and water.

The Vectra Genisys Laser's case may be cleaned by wiping with a damp cloth or mild cleaning solution. Avoid abrasive cleansers.

The Laser Head must be cleaned with a disinfectant cleaner (i.e. Virex® II 256) or a germicidal disposable cloth (i.e. PDI Sani-Cloth® Plus/Hb) between each therapy session. Do not use any chlorine-based cleaners on the laser head.

Service

The Vectra Genisys Laser applicators must be recalibrated annually. It is recommended that all Chattanooga Group laser products be returned to the factory or an authorized servicing dealer for repairs or recalibration. Recalibration is also recommended after the replacement or repair of any major component. Should the Vectra Genisys Laser unit require service, contact the selling dealer or Chattanooga Group Service Department.

NOTE: The Vectra Genisys Laser unit was calibrated during the manufacturing process. The unit is ready to be placed into service upon delivery.

All units returned to the factory for service must include the following:

WARRANTY REPAIR/OUT OF WARRANTY REPAIR

1. Written statement containing the following information:

- Return Authorization (RA) Number - Obtain from Factory
- Unit Model Number
- Unit Serial Number
- Contact person with Phone and Fax Numbers
- Billing Address (for Out of Warranty Repair)
- Shipping Address (Where to Ship Unit after Repair)
- Detailed Description of Problem or Symptoms

2. Copy of original invoice issued at purchase of the unit.

3. Ship the unit to address specified by an authorized service technician.

Service to these units should be performed only by Service Technicians certified by Chattanooga Group. Laser requires annual calibration, from the date placed in service, by a Service Technician certified by Chattanooga Group.
The Vectra Genisys Laser Service Manual is available for purchase and can be requested from the selling dealer or Chattanooga Group Service Department. The Service Manual contains safety precautions, nomenclature, specifications, troubleshooting, removal and replacement instructions, general maintenance, calibration instructions, parts lists, schematics, warranty and other information which would assist a certified service technician to repair the unit.

Council Directive 2002/96/EC concerning Waste Electrical and Electronic Equipment (WEEE). Indicates a requirement not to dispose of WEEE as municipal waste. Contact your local distributor for information regarding disposal of the unit and accessories.

WARRANTY

Chattanooga Group, a division of Encore Medical L.P., ("Company") warrants that the Vectra Genisys® Laser ("Product") is free of defects in material and workmanship. This warranty shall remain in effect for two years (24 months) from the date of original consumer purchase. If this Product fails to function during the two year warranty period due to a defect in material or workmanship, at the Company's option, Company or the selling dealer will repair or replace this Product without charge within a period of thirty (30) days from the date on which the Product is returned to the Company or the dealer. All repairs to the Product must be performed by a service center certified by the Company. Any modifications or repairs performed by unauthorized centers or groups will void this warranty.

The warranty period for applicators is one year (12 months).

This Warranty Does Not Cover:

- ANY MALFUNCTION OR FAILURE IN THE PRODUCT CAUSED BY PRODUCT MISUSE, INCLUDING, BUT NOT LIMITED TO, DROPPING THE UNIT OR APPLICATOR AND FAILURE TO PROVIDE REASONABLE AND NECESSARY MAINTENANCE OR ANY USE THAT IS INCONSISTENT WITH THE PRODUCT USER MANUAL.
- Replacement parts or labor furnished by anyone other than the Company, the selling dealer or a certified Company service technician.
- Defects or damage caused by labor furnished by someone other than Company, the selling dealer or a certified Company service technician.

COMPANY SHALL NOT BE LIABLE IN ANY EVENT FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. To Obtain Service From Company or the selling dealer under this warranty:

1. A written claim must be made within the warranty period to the Company or the selling dealer. Written claims made to the Company should be sent to:

   Telephone: (800) 592-7329 USA
   (423) 870-2281
   (866) 864-0598 - Service
   FAX: (423) 875-5497

   and

2. The Product must be returned to the Company or the selling dealer by the owner.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state or location to location.

The Company does not authorize any person or representative to create for it any other obligation or liability in connection with the sale of the Product. Any representation or agreement not contained in the warranty shall be void and of no effect.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

TABLE 1: GUIDANCE AND MANUFACTURER'S DECLARATION–ELECTROMAGNETIC EMISSIONS

The Vectra Genisys Laser unit is intended for use in the electromagnetic environment specified in the table below. The user of the Vectra Genisys Laser unit should assure that it is used in such an environment.

Emission Tests	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR 11	Group 1	The Vectra Genisys Laser uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The Vectra Genisys Laser is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/Flicker Emissions IEC 61000-3-3	Complies	

TABLE 2: GUIDANCE AND MANUFACTURER'S DECLARATION–ELECTROMAGNETIC IMMUNITY

The Vectra Genisys Laser is intended for use in the electromagnetic environment specified in the table below. The user of the Vectra Genisys Laser should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Vectra Genisys Laser requires continued operation during power mains interruptions, it is recommended that the Vectra Genisys Laser be powered from an uninterrupted power supply or a battery.
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE: U_T is the a.c. mains voltage prior to application of the test level.

TABLE 2: GUIDANCE AND MANUFACTURER'S DECLARATION–ELECTROMAGNETIC IMMUNITY (CONTINUED)

The Vectra Genisys Laser is intended for use in the electromagnetic environment specified in the table below. The user of the Vectra Genisys Laser unit should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
			Portable and mobile RF communications equipment should be used no closer to any part of the Vectra Genisys Laser , including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.
			Recommended separation distance:
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 V	$d = \frac{[3.5]\sqrt{P}}{V_1}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	±1 kV differential mode ±2 kV common mode	$d = \frac{[3.5]\sqrt{P}}{E_1}$ 80 MHz to 800 MHz $d = \frac{[7]\sqrt{P}}{E_1}$ 800 MHz to 2.5 GHz
			where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a], should be less than the compliance level in each frequency range[b]. Interference may occur in the vicinity of equipment marked with the following symbol:

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Vectra Genisys Laser is used exceeds the applicable RF compliance level above, the Vectra Genisys Laser should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Vectra Genisys Laser .

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

TABLE 3: RECOMMENDED SEPARATION DISTANCES BETWEEN PORTABLE AND MOBILE RF COMMUNICATIONS EQUIPMENT AND THE VECTRA GENISYS LASER

The Vectra Genisys Laser unit is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Vectra Genisys Laser can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Vectra Genisys Laser as recommended below, according to the maximum output power of the communications equipment.

Rated Maximum Output Power of Transmitter W	Separation Distance According to Frequency of Transmitter m		
	150 kHz to 80 MHz $d = [3.5]\sqrt{P}$ V_1	80 MHz to 800 MHz $d = [3.5]\sqrt{P}$ E_1	800 MHz to 800 MHz $d = [7]\sqrt{P}$ E_1
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

Chattanooga Group

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